memmert

OPERATING INSTRUCTIONS

Drying ovens

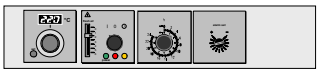
UM 200 - 800

ULM 400 – 800

Sterilisers

SM 200 - 400

SLM 400 – 800



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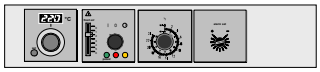


The text of these Operating Instructions has been translated from the German. If any part of the text is doubtful or the interpretation is unclear, and also in case of errors, the German original is to be considered as valid.

1 Congratulations on your choice of a MEMMERT Oven!

Manufactured in Germany using the latest production techniques and finest materials available, you now possess a technically superior and fully developed product. Your oven has already been under extensive testing in our factory.

For correct operation of the equipment it is essential to observe the operating and maintenance instructions below. This will ensure that your equipment will give many years´ satisfactory service.

Explanation of symbols:

These symbols mark important indications in the operating instructions

The corresponding markings on the oven mean:

Note the Operating Instructions!

Attention, outside case temperature may be hot!

General safety instructions.

The physical and chemical properties of your load (e.g. inflammation temp. etc.) have strictly to be observed, as otherwise considerable damages (load, oven, surroundings of apparatus) can appear.

Please note that the Memmert ovens described here are <u>not</u> explosion-proof (they do <u>not</u> conform to Occupational Association Regulation VBG 24). They are therefore <u>unsuitable</u> for drying, evaporating or burning-in of enamels or similar substances whose solvent may form an inflammable mixture together with air. There must be no possibility for inflammable or explosive gas/air mixtures to form either inside the oven or in the immediate neighbourhood of the equipment.

Excessive dust or aggressive vapors in the interior of the oven may result in sediments within the oven and cause short circuits or damage to the electronic parts. Therefore dust and aggressive vapors should be kept from the oven.

Transport:

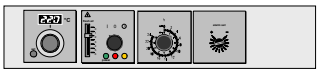
Always use gloves !

If the ovens have to be carried, at least 2 persons are required for this mode of transport depending on size (Model 200 to 500) or at least 4 persons (Model 600 and 700)

Attention!

Take special care when working at high temperature!

Outside case temperature may be hot!



2 Technical data summary

MEMMERT appliances are electrically heated and thermostatically controlled. Series UM/SM have natural air circulation whilst series ULM/SLM have fan assisted circulation.

A PT100 DIN B, DIN 43 760 measures the temperature in the working chamber.

Ambient conditions	Ambient temperature 5°C - 40°C, rH max. 80%. Overvoltage Category: II Contamination degree: 2 according to IEC 664
Setting temperature range	30°C to nominal temperature (See rating plate)
Working temperature range	From 5°C above ambient to nominal temperature = maximum temperature (see rating plate) When the fan of the models ULM / SLM is switched on, the working temperature can be set from 10°C degrees above ambient up to the nominal temperature = maximum temperature (according to rating plate).
Overheat safety device	Serial adjustable overheat control in compliance with DIN 12880 Class 3.1; Class 2 protection (adjustable temperature limiter) available on request.

Class	Aim of protection	Scope of protection	Safety device	Safety measures
2	Protection of the oven, the environment and the contents of the oven	No risk liable to originate from the oven in the event of a fault	TWB (adjustable temperaure limiter) automatically shuts off the oven if the user selected temperature limit is exceeded.	Special safety measures required depending on the purpose for which the oven is used
3.1		The contents of the oven are protected against overheating	TWW (adjustable overheat controller) takes over control of oven if temperature is exceeded.	

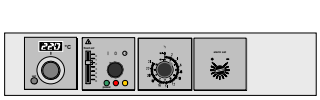
2.1 Electrical supply

50 or 60 Hz. Adequate insulated supply which incorporates earth conductor according to EN 61010, Protection IP 20, no humidity protection according to DIN 40 050. Interference suppression Grade N according to VDE 0875, limiting values of the class B, part one.

A fuse 250V/15A quick is used for oven protection (in ovens with 400V 3N~ power supply 3 fuses).

Before current-connection please compare label on the oven and instructions of your local current supplier.

(e.g. in Germany, DIN VDE 0100 with FI - safety device).



model	volume	current consum.	power	**voltage ±10%**	weight
UM/SM 200	32 l	4,78 A	1100 W	230 V~	28 kg
UM/SM 300	39 l	5,22 A	1200 W	230 V~	30 kg
UM/SM/ULM/SLM 400	53 l	6,09A	1400 W	230 V~	35 kg
UM/ULM/SLM 500	108 l	8,70 A	2000 W	230 V~	50 kg
UM/ULM/SLM 600	256 l	10,43 A	2400 W	230 V~	87 kg
UM/ULM/SLM 700	416 l	5,80 A	4000 W	400 V 3N~	121 kg
UM/ULM/SLM 800	749 l	6,96 A	4800 W	400 V 3N~	164 kg

This equipment is intended for operation on a supply system with a system impedance Z_{max} at the transfer point (building connection) which does not exceed 0.12 Ohm. The user has to ensure that the equipment is being operated on a supply system which meets this requirement. If necessary, details of the system impedance can be obtained from the local power supply authority.

Quality of material

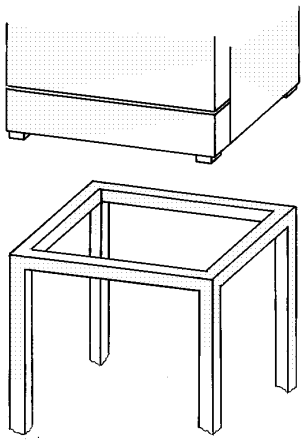
Memmert is using stainless steel (Spec. 1.4301) for the external casing as well as for the interior, an outstanding material because of its high stability, optimum hygienic features and corrosion resistance against many (not all!) chemical combinations (Attention e.g. at chlorine combinations!).

WARNING!

Before removing top cover – pull out plug !

2.2 Installation options (special equipment)

Do not place the steriliser on a readily inflammable support!



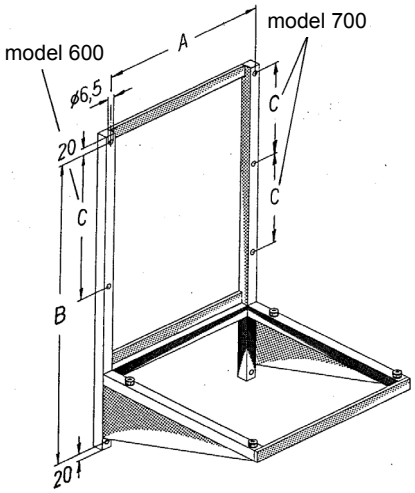
The oven can be set up on the floor or on a table (bench), model 500 - 700 on a subframe. Ensure at least 150 mm clearance between back of oven and wall. The distance between ceiling and oven should not be less than 200 mm and the minimum wall spacing to the sides is 80 mm.
Generally, a sufficient circulation of air around the oven is required.

After the oven has been set up horizontally the door can be adjusted if required (**see chapter - MAINTENANCE**).

The model 800 is movable. The front castors are lockable by means of a fixation. In order to assure stability, the front castors **must always be adjusted to the front side** of the oven for locking.

2.3 Wall mounting (special equipment)

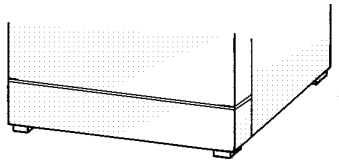
Up to model 700 for all ovens metal mounting brackets are available. A mounting bracket is delivered with an incombustible plate. The dimensions of the fixing screws are to be choosen depending on the total weight (equipment and loading) of the charge and the quality of the wall.



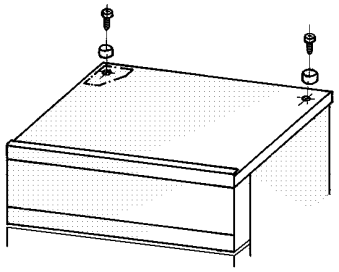
Pitches of holes for wall fixation (wall bracket)

model	A		B		C	
	mm	inch	mm	inch	mm	inch
200	489	19,25	770	30,32		
300	569	22,4	770	30.32		
400	489	19,25	850	33.47		
500	649	25,55	930	36,61		
600	889	35,00	1090	42,91	540	21,26
700	1129	44,45	1250	49,21	410	16,14

2.4 Stacking device (special equipment)



Where the requirement is for two ovens of the same size to be placed one on top of the other, the oven with the lower working temperature should be placed on the bottom .



Mounting:

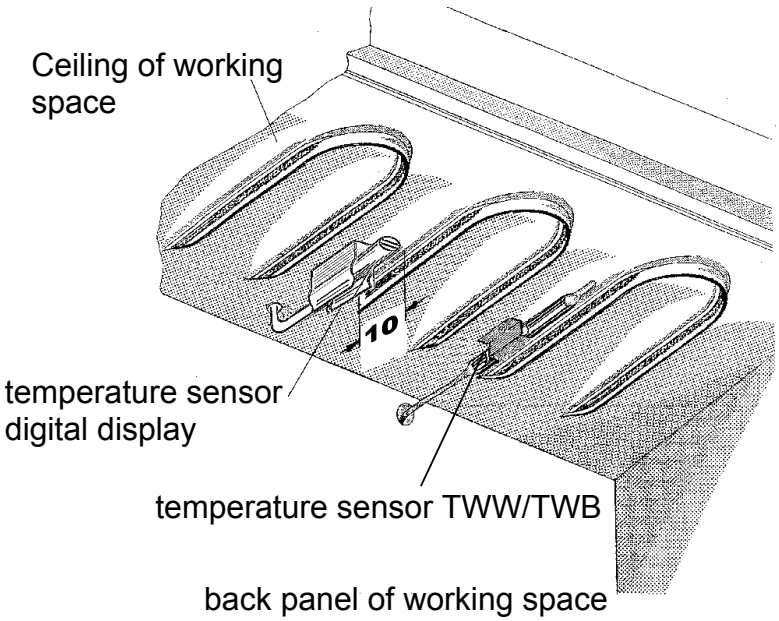
- Remove the top of the bottom oven and turning it upside down place the drilling jig into the back corner. Mark out the hole position and drill a 4,2 mm diameter hole.
- With the screws provided fix the centering cylinders into position. Re-fix top cover.
- Model 700 can only be stacked with an intermediate frame.

3 Putting into operation

Attention !

Extremely strong shocks during transport can cause a displacement of the temperature sensors in the holding clips inside the working space.

Take care before the first putting into operation that the temperature sensors are checked on their correct position and if necessary are slided cautiously backwards or forwards in the holding clip (see fig.).



Handling of the door

The door is opened by pulling the door knob, and is closed by pushing in the door knob.

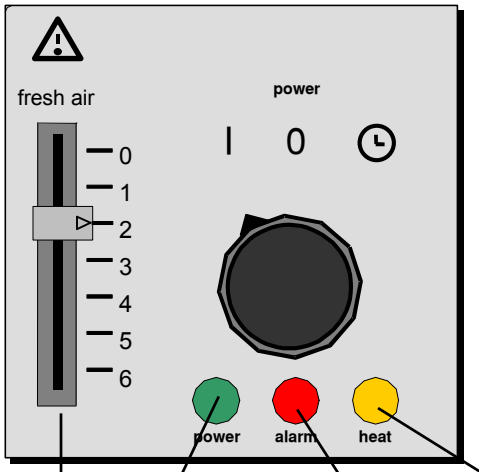
Attention!

When the oven is started up for the first time it should be run under supervision until steady conditions are reached.

4 Main switch module with fresh air control

The main switch module contains:

- main switch to select the working mode
- three signal lamps for display of the oven status
- slide knob for fresh air control

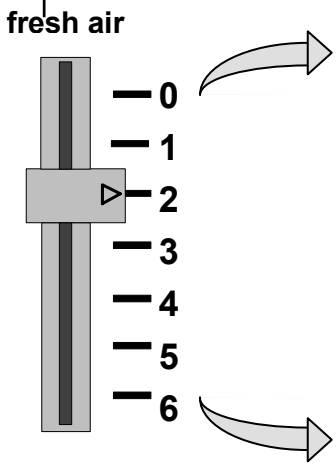


- **Main switch in position 0:**
  oven is shut down
- **Main switch in position I:**
  continuous operation
- **Main switch in position** 🕒**:**
  Operation with timer (special equipment)

Green:
ready for operation

Red:
fault indicator

Yellow:
oven is heating



Flap closed: virtually no through ventilation.

Intermediate positions: the air in the camber is renewed to a limited extent.

Maximum fresh air ventilation, but **no** complete change of air within the chamber (in ovens with an air turbine by max. rotation speed).

5 Working controller module

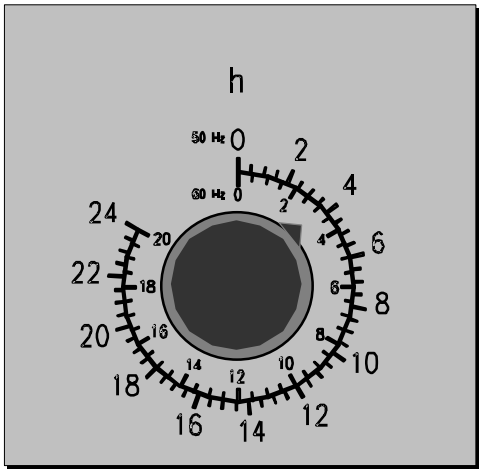
The controller is operated with the aid of the rotary knob.

- Set temperature regulator rotary knob to desired temperature
- Scale can be locked by turning screw **lock**.

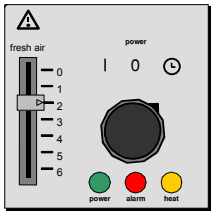
When the working temperature is reached, intermittent illumination of the yellow pilot lamp indicates operation of the thermostat. If there are big differences between set-temperature and digital display, this can be eliminated by adjusting the controller (see **maintenance).**

Severe transport and extreme climatic conditions may cause discrepancies (ambient test-temperature about 22ºC).

6 Operation with timer (special equipment with UM/ULM oven)



Main switch in position ⏲



- Set temperature regulator rotary knob to desired temperature (see chapter **Working controller module**).
- Set the required time period.

Running time 50 Hz = 24 hours
Running time 60 Hz = 20 hours.
Oven is automatically turned off when the elapsed time has run down.

Timers are available for fitting by the user after delivery and full instructions are supplied with the timers to be retrofitted.

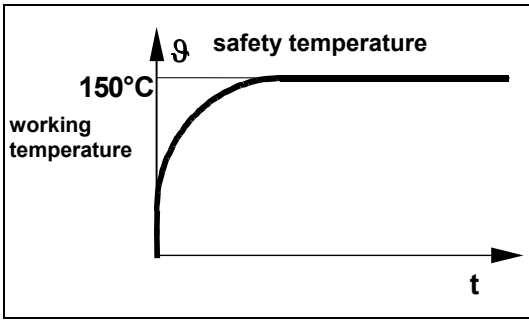
The installation has to be made by a service engineer.

7 Safety devices

The oven can be equipped with an adjustable overheat controller (TWW), class 3.1 or adjustable temperature limiter (TWB), class 2. Both work independently of the temperature control system according to DIN 12880. By different adjustments, those safety devices can have two different functions:

- Protection of oven and environment and additionally
- Protection of the load from excessive temperature

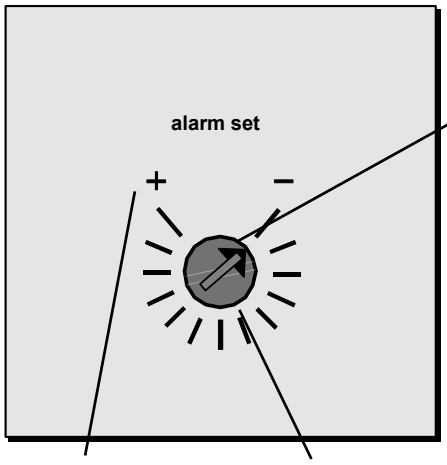
The safety devices should be checked at regular intervals, e.g. once a month, once the oven has stabilised at the desired temperature. To perform this safety check, reduce the setting of the safety device until the red control light at the main switch module turns on. After that, the safety device can be set again.



Notice:

During operation the safety device has to be set sufficiently higher than the maximum working temperature or at the maximum temperature of the oven.

7.1 Adjustable overheat controller (TWW), class 3.1 according to DIN 12880



Protection of oven and environment:

- Turn the adjustable overheat controller e.g. by use of a coin to upper temperature limit.

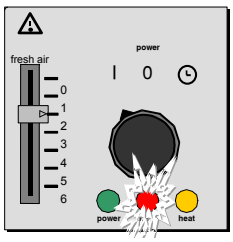
Protection of load:

- First turn adjustable overheat controller to upper limit.
- After the oven has stabilised, the setting of the overheat controller should be moved down until it operates.

Upper temperature limit:
Protection of oven and environment

Set close to the switching point:
Protection of the load

- The red signal lamp in the main switch module turns on.



- Now turn back the overheat controller to nearly one digit higher.

Maximum temperature rating of oven	220°C
one scale line means approx.	15°C

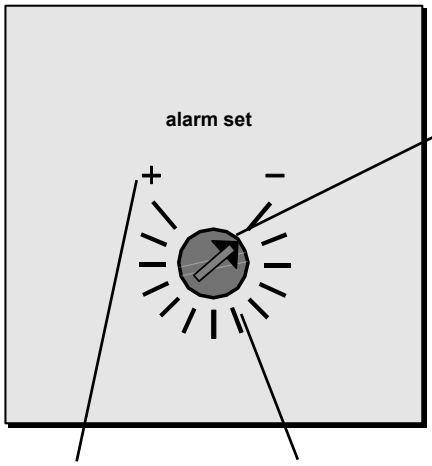
Should the temperature rise above the set safety temperature, the adjustable overheat controller takes over the temperature control.

- **the „alarm“ lamp turns on**

as soon as the TWW has switched off the heating

In this case please check the TWW setting as described and readjust it if necessary. Should a fault condition be present, please contact an authorised service station for Memmert equipment.

7.2 Adjustable temperature limiter (TWB), class 2 according to DIN 12880



Upper temperature limit:
Protection of oven and environment

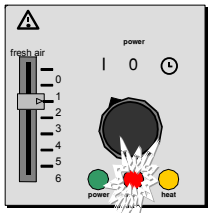
Set close to the switching point:
Protection of the load

Protection of oven and environment:

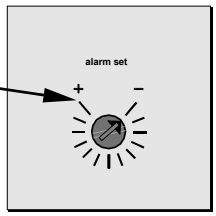
- Turn temperature limiter e.g. with a coin to upper temperature limit.

Protection of load:

- First turn temperature limiter to upper temperature limit.
- After the oven has stabilised, the temperature limiter should be moved down until it operates.
- The red signal lamp in the main switch module lights up.



- Now turn back the temperature limiter to nearly one digit higher.
- The temperature limiter must be reset by pressing the adjustment knob.

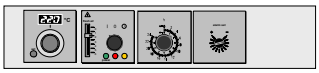


Maximum temperature rating of oven	220°C
one scale line means approx.	15°C

Should the temperature rise above the set safety temperature, the adjustable temperature limiter switches off the heating.

- **the „alarm“ lamp turns on.**

In this case please check the TWB setting as described and readjust it if necessary. Should a fault condition be present, please contact an authorised service station for Memmert equipment.



8 Steriliser

8.1 Application

The apparatus is used for sterilizing medical materials by employing dry heat through hot air at atmospheric pressure

8.2 Directives for sterilisation in MEMMERT- hot-air sterilisers.

For the hot air sterilisation, many directions exist concerning the temperatures and sterilisation times to be selected as well as the packaging of the sterilisation goods. The data to be selected, depend on the nature of the goods to be sterilised and on the type of the germs to be deactivated. Please make yourself familiar with the applicable direction for your application before carrying out a sterilisation with your MEMMERT steriliser.

Some examples for the correct preparation of different medical instruments are shown in the following table:

Charging	**Preparation**
Instruments with no soft soldered parts / sharp Instruments	Place the cleaned instruments, twin-packed in aluminium foil (recommendable)
Modern Syringes (no plastic)	Place flasks and cylinders separately, twin-packed in aluminium foil (recommendable)
Glass and glass instruments	Disassemble the cleaned glass containers and glass syringes. Place on trays - cool slowly

Bottles and similar items must be sterilised with the opening pointing downward in order to prevent the development of cold air nests. Organic fabrics (e.g. cork) must not be used as closing material for bins.

180°C are usually recommended as sterilising temperature (cf. German drug book DAB 10 or other national standards).

The whole required time period is setted using the timer. The time period consists of the heating time, the equalising time (i.e. the time it takes until the desired temperature is reached at any point of the working chamber), of the actual sterilising time and the safety surcharge.

The following table shows rough values for the hold time to be selected at the controller, in dependence of the weight of the sterilising load for ovens with and without air turbine (fan). Please note, that this data can only be applied for correct, loose loading. Information on the right loading of the oven are given in this operation manual and on the adhesive label directly on the steriliser.

Sterilisation temperature = 180°C						
	Weight of the load					
	low		medium		high	
SM/SLM	without fan heating + sterilising time	with fan heating + sterilising time	without fan heating + sterilising time	with fan heating + sterilising time	without fan heating + sterilising time	with fan heating + sterilising time
200	¾+¾=1½ h	-	¾+1¼=2 h	-	¾+1¾=2 ½h	-
300	¾+¾=1½ h	-	¾+1¼=2 h	-	¾+1¾=2½ h	-
400	¾+1¼=2 h	½+1=1½ h	¾+1¾=2½ h	¾+1¼=2 h	1+2=3 h	¾+1¾=2½ h
500	¾+1¼=2 h	½+1=1½ h	¾+1¾=2½ h	¾+1¼=2 h	1+2=3 h	¾+1¾=2½ h
600	1+1½=2½ h	1+1=2 h	1+2½=3½ h	1+1½=2½ h	1¼+2¼=3½ h	1+2=3 h
700	1+1½=2½ h	1+1=2 h	1+2½=3½ h	1+1½=2½ h	1¼+2¼=3½ h	1¼+2¼=3½ h
800	1½+1½=3 h	1¼+1¼=2½ h	1½+2½=4 h	1¼+1¾=3 h	1½+2½=4 h	1¼+2¼=3½ h

The sterilisation time has to be multiplied by about 4, if a sterilisation temperature of 160°C is selected.

With large ovens and heavy loads, the use of grates (option) is recommended instead of the perforated shelfs.

In particular with heavy loads, the untested usage of these provisional values is not sufficient. For a safe sterilisation, a validation of the individual sterilisation process must be done, using e.g. additional temperature sensors or germ packets.

When sterilising the air flap has to be closed after the humid load has been dried.

	WARNING! **Models 700 and 800 are fitted with a door closure mechanism incorporating a lock. If the user, against our express warning, enters the interior of the steriliser it is essential that he first pulls off the key and keeps it on his person.**

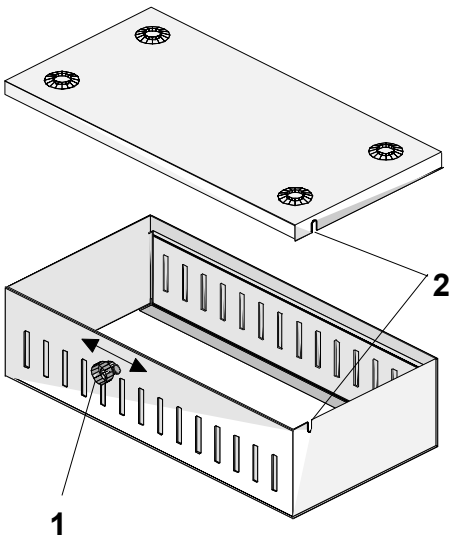
Note: In case of a power failure the sterilising process may not be completed properly. Therefore a permanent observation of the sterilising process or of the mains supply is necessary to provide a safe sterilisation.

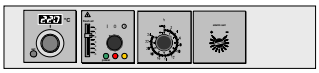
8.3 Notes on the work with sterilising cassettes:

The cassettes should be placed in the steriliser so that the hot air can flow easily through the air ducts (in an steriliser with air turbine the airstream flows crosswise through the working space). The directives about correct loading, which can be found in this operating manual and on the steriliser have to be followed also when using sterilising cassettes. This makes sure that a good temperature distribution is obtained and that the development of cold air nests is prevented.

The sterilisation load must be packed in aluminium foil as shown in the table and must be placed in the sterilising cassettes. The air ducts of the box **must be opened** for sterilising.

A temperature sensor for the verification of the temperature can be brought into the sterilising cassette through opening 2.
After the sterilising time has elapsed, the air ducts **must be closed** by shifting knob 1 in the direction of the arrow.
In this way, the sterilised goods can be preserved in the closed cassette for some days.





9 Loading

Ovens described in this instruction manual must not be used for drying or warming substances which generate ignitable vapours when mixed with air.

The ovens described here must never be operated in areas with an explosive atmosphere.

For correct operation and uniform temperature distribution it is essential to maintain free air circulation throughout the oven. The contents of the oven should therefore not be packed tightly, furthermore they must not be placed close to any of the heating ribs on the sides, top or bottom of the oven (note the loading diagrams on the ovens).

In order to ensure optimum air circulation the shelves should be arranged to have roughly equal gaps between door, shelf and the rear of the working chamber.
For the maximum number of shelves with the permissible load, see table below.

In certain situations where, for example, the load is packed tightly and the ventilation slide is fully open it is possible that the unit will control at a temperature below that set on the thermostat. In order to compensate it may be necessary to increase the thermostat setting until the desired temperature is shown on the digital display of the working controller.

The following schedule gives recommended loading levels which will ensure homogeneous temperature distribution within the working chamber.

Model	Max. number of shelves	Load each shelf max. kg	Total load kg
200	3	15	30
300	3	12	30
400	4	30	90
500	5	30	60
600	7	30	80
700	8	30	100
800	10	30	160

10 Maintenance

General information

Memmert appliances require minimal servicing. It is recommended, however, to lubricate the mechanical parts of the doorhinges and movable parts of the door lock from time to time. Under normal conditions this should be done annually but up to four times a year if undergoing continuous operation. Use a heat resistant oil or thin silicon grease. The movable parts of the temperature controller should be lubricated too. Therefore use silicon grease.

In case of a fault which makes necessary to open the oven it has to be checked by a qualified service engineer.

Adjustment

It is necessary to keep the top of the oven closed in case of readjustment.

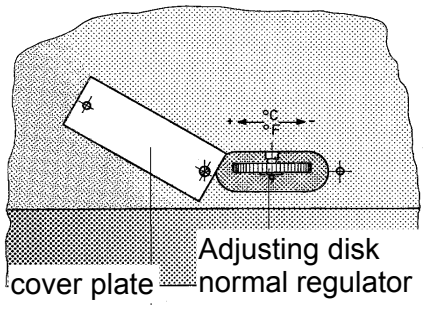
Empty oven with one empty shelve in the middle has to be heated up to maximum temperature and allowed sufficient time to reach steady temperature condition. (Please wait at least 60 min.).

1. Remove a screw on the cover at the lower part of the back wall and swing up the cover as until the opening in the back wall is clear.
2. Turn the adjusting disk (knurled disk, approx. 60 mm behind the back wall) with a tool (e.g. screwdriver) **through a small angle**. (**Danger! The disk is hot!**)

Turning to the left increases the control temperature.

Turning to the right decreases the control temperature.

Look at the marks above cover plate at the back side.



3. Make only small adjustments at any one time and pause (approx. 45 min) so that the effect of the adjustment can be noted on the digital display before further adjustments are made.
4. If required repeat the recalibration. It is **essential to close the cover again and secure it in position after each action.**

Note

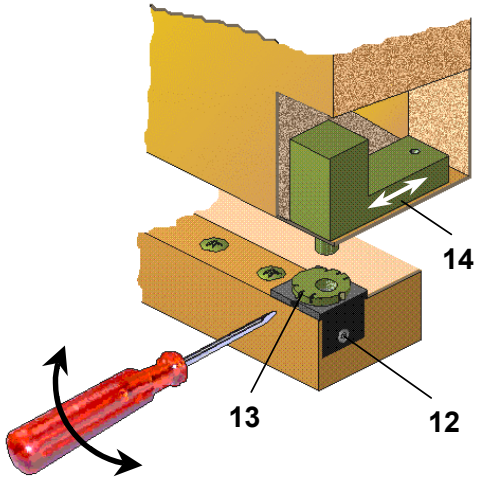
After **each** adjustment it is **essential** to close the cover and secure it in position.

A tightly closing door is an essential requirement on ovens. MEMMERT-ovens ensure perfectly tight closing of the door through a seal on the oven casing. The door seal presses accurately against the casing seal. In continuous operation the flexible seal material may acquire a permanent set. For proper closing of the door it may be necessary to adjust the hinge or the locking plate.

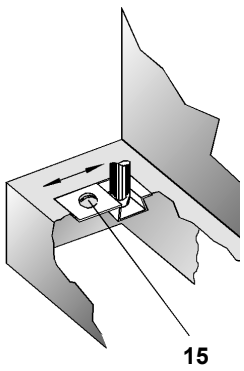
10.1 Readjusting the door

After releasing the screw No.12 (**ATTENTION!** Screw No. 12 is secured with glue. Loosen jerky with inner hexagon key wrench 2 mm) the door can be adjusted by turning the eccentric 13 in the direction of the arrow (using a screwdriver). Tighten screw No. 12 again.

In addition the upper part No.14 of the door hinge can be moved slightly in the direction of the arrow after releasing the 2 screws at the top or bottom of the door.



The locking plate can also be readjusted in the direction of the arrow after releasing the screw No.15.
Ensure that the cover is again screwed down tightly.



11 Cleaning

By regular cleaning of the easy to clean interior, residues are avoided which at continuous influence can impair the outfit and function of the oven.

The oven can be cleaned with commercial stainless steel cleaning agents. Please note that objects liable to rust must not be placed into the interior. Rust sediments lead to contamination of the interior or external casing.

If rust stains caused by contamination occur on the interior surface, the affected areas must be cleaned and polished immediately.

The details in these Operation Instructions must be carefully observed in order to ensure satisfactory operation.
Warranty and claims for damage are excluded if these instructions are disregarded.

We reserve the right to make changes in technical specifications.
Dimensions subject to confirmation.

Standard ovens (UM / ULM) are safety-approved and bear the test marks:

CE	ME52	VDE EMV	DVE GS geprüfte Sicherheit

Sterilisers (SM / SLM) are safety-approved and bear the test marks:

CE **ref. No. 0125** **authority:** **LGA Nürnberg**	ME52	VDE EMV	DVE

12 Our Address

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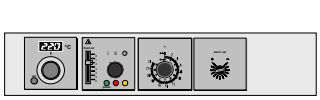


EC Declaration of Conformity

Manufacturer´s name and address:	MEMMERT GmbH + Co. KG Äußere Rittersbacher Straße 38 D-91126 Schwabach
Product:	Universal oven
Type:	UM … / ULM … / UE … / ULE … / UP … / ULP …
Sizes:	100 / 200 / 300 / 400 / 500 / 600 / 700 / 800
Nominal voltage:	AC 230 V or 3 ~ AC 400 V 50 / 60 Hz alternative AC 115 V 50/60 Hz

The designated product is in conformity with the European EMC-Directive

89/336/EEC

including amendments

Council Directive of 03 May 1989 on the approximation of the laws of the Member States relating to electromagnetic compatibility.

Full compliance with the standards listed below proves the conformity of the designated product with the essential protection requirements of the above-mentioned EC Directive:

DIN EN 61 326 (VDE 0843 part 20): 1998-01	**EN 61 326: 1997**
DIN EN 61 326/A1 (VDE 0843 part 20/A1): 1999-05	**EN 61 326: 1997/A1 : 1998**
RFI suppression: Class B	
DIN EN 61 000-3-11 (VDE 0838 part 11): 2001-04	**EN 61 000-3-11: 2000**

The designated product is in conformity with the European Low Voltage Directive

73/23/EEC

including amendments

Council Directive on the approximation of the laws of the Member States relating to Electrical equipment for use within certain voltage limits.

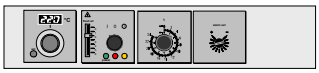
Full compliance with the standards listed below proves the conformity of the designated product with the essential protection requirements of the above-mentioned EC Directive:

DIN EN 61 010-1 (VDE 0411 part 1): 1994-03	**EN 61 010-1: 1993**
DIN EN 61 010-2-010 (VDE 0411 part 2-010): 1995-03	**EN 61 010-2-010: 1994**

Schwabach, 08.10.02

(Legally binding signature of the issuer)

This declaration certifies compliance with the above mentioned directives but does not include a property assurance. The safety note given in the product documentation which are part of the supply, must be observed.



EG-Konformitätserklärung

Manufacturer´s name and address:	MEMMERT GmbH + Co. KG Äußere Rittersbacher Straße 38 D-91126 Schwabach
Product:	Steriliser
Type:	SM … / SLM … / SE … / SLE … / SLP …
Sizes:	100 / 200 / 300 / 400 / 500 / 600 / 700 / 800
Nominal voltage:	AC 230 V oder 3 ~ AC 400 V 50 / 60 Hz alternative AC 115 V 50/60 Hz

The product meets the regulations of the directive

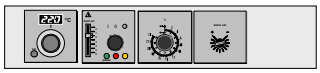
93/42/EWG

Directive of the council to adapt legal regulations of the member states on the subject of medical products dd. 14.06.1993 (Abl. EG Nr. L 169, S. 1, 12.07.1993) including annex and modifications.

Schwabach, 08.10.02

(Legally binding signature of the issuer)

This declaration certifies compliance with the above mentioned directives but does not include a property assurance. The safety note given in the product documentation which are part of the supply, must be observed.



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